

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A nucleic acid detection sensor comprising:
a plurality of nucleic acid chain fixed electrodes to each of which a probe nucleic acid chain is fixed; and
a counter electrode which is arranged opposite to the nucleic acid chain fixed electrodes, wherein a current flowing flows between the counter electrode and the each nucleic acid chain fixed electrode.
2. (Canceled).
3. (Currently Amended) The nucleic acid detection sensor according to claim 1, wherein the counter electrode includes a plurality of counter electrodes and the plurality of counter electrodes are is provided for each of the nucleic acid chain fixed electrodes, respectively.
4. (Original) The nucleic acid detection sensor according to claim 1, wherein each of the nucleic acid chain fixed electrodes has a flat plane to which the probe nucleic acid is fixed,
the counter electrode has a flat plane, and
the flat plane of one of the nucleic acid chain fixed electrodes is arranged to face the flat plane of the counter electrode.
5. (Currently Amended) The nucleic acid detection sensor according to claim 1, wherein

the nucleic acid chain fixed electrodes and the counter electrode is arranged ~~to flow so~~
that a test liquid can flow therebetween.

6. (Currently Amended) The nucleic acid detection sensor according to claim 1,
wherein

a test liquid is filled between the nucleic acid chain fixed electrodes and the counter
electrode ~~are exposed to a test liquid and detect so that~~ a current change between the nucleic
acid chain fixed electrodes and the counter electrode caused by a hybridization of the probe
nuclei acid and a nuclei acid in the test liquid is detected.

7. (Currently Amended) The nucleic acid detection sensor according to claim 1,
wherein

a duplex chain cognitive body is added to ~~the~~ a test liquid filled between the nucleic
acid chain fixed electrodes and the counter electrode, and
a current change between the nucleic acid chain fixed electrodes and the counter
electrode is caused by the duplex chain cognitive body is detected.

8. (Currently Amended) The nucleic acid detection sensor according to claim 1,
wherein

the nucleic acid chain fixed electrodes ~~and the counter electrode~~ are comb electrodes;
and arranged to be mutually engaged.

9. (Currently Amended) The nucleic acid detection sensor according to claim 1,
further comprising .

a plurality of reference electrodes provided for each of the nucleic acid chain fixed electrodes, respectively, configured to make a voltage between the nucleic acid chain fixed electrodes and the counter electrode constant.

10. (Currently Amended) A nucleic acid detection sensor comprising:
a plurality of nucleic acid chain fixed electrodes to each of which the a probe nucleic acid chain is fixed;
a counter electrode, a current flowing between each of the nucleic acid chain fixed electrodes and the counter electrode; and
a plurality of reference electrodes provided for each of the nucleic acid chain fixed electrodes, respectively configured to make a voltage between the nucleic acid chain fixed electrode and the counter electrode constant.

11. (Currently Amended) The nucleic acid detection sensor according to claim 10, wherein

the nucleic acid chain fixed electrodes and the reference electrode are comb electrodes and are arranged to be engaged.

12. (Original) The nucleic acid detection sensor according to claim 10, further comprising:

a first amplifier which inputs a signal from the reference electrode or a scanning line;
a second amplifier to input a reference potential to apply a predetermined potential to the counter electrode; and
a reference resistor connected between an output side of the first amplifier and the reference potential.

13. (Currently Amended) The nucleic acid detection sensor according to claim 10,
wherein

a test liquid is filled between the nucleic acid chain fixed electrodes and the counter electrode are exposed to a test liquid and detect so that a current change between the nucleic acid chain fixed electrodes and the counter electrode caused by a hybridization of the probe nucleic acid and a nucleic acid in the test liquid is detected.

14. (Currently Amended) The nucleic acid detection sensor according to claim 13,
wherein

a duplex chain cognitive body is added to ~~the~~ a test liquid filled between the nucleic acid chain fixed electrodes and the counter electrode, and
a current change between the nucleic acid chain fixed electrodes and the counter electrode is caused by the duplex chain cognitive body is detected.

15. (Currently Amended) The nucleic acid detection sensor according to claim 10,
wherein

the counter electrode and the nucleic acid chain fixed electrodes are formed on a same plane and the counter electrode is formed so as to surround the nucleic acid chain fixed electrodes.

16. (Currently Amended) A nucleic acid detection sensor comprising:
a plurality of nucleic acid chain fixed electrodes, to each of which a probe nucleic acid chain is fixed, arranged in a matrix;
a counter electrode;

a plurality of scanning lines configured to transmit select signals for selecting the plurality of nucleic acid chain fixed electrodes one by one;

a plurality of signal lines configured to transmit a measurement signal from the plurality of nucleic acid chain fixed electrodes; and

a plurality of switching elements connected with the plurality of nucleic acid chain fixed electrodes, the plurality of scanning lines, and the plurality of signal lines, configured to turn on and turn off a connection between the plurality of nucleic acid chain fixed electrodes and the plurality of signal lines according to the select signals from the plurality of scanning lines, and provided for the nucleic acid chain fixed electrodes, respectively; and

~~an A/D converter connected with the plurality of switching elements.~~

17. (Currently Amended) The nucleic acid detection sensor according to claim 16, further comprising

a plurality of reference electrodes provided for ~~each~~ of the nucleic acid chain fixed electrodes, ~~configured to make a voltage between the nucleic acid chain fixed electrodes and counter electrode constant respectively.~~

18. (Currently Amended) The nucleic acid detection sensor according to claim 16, wherein

the counter electrode and the nucleic acid chain fixed electrodes are formed on a same plane and the counter electrode is formed so as to surround the nucleic acid chain fixed electrode.

19. (Currently Amended) The nucleic acid detection sensor according to claim 16, wherein

a test liquid is filled between the nucleic acid chain fixed electrodes and the counter electrode ~~are exposed to a test liquid and detect so that~~ a current change between the nucleic acid chain fixed electrodes and the counter electrode caused by a hybridization of the probe nucleic acid and a nucleic acid in the test liquid is detected.

20. (Currently Amended) The nucleic acid detection sensor according to claim 19, wherein

a duplex chain cognitive body is added to ~~the~~ a test liquid filled between the nucleic acid chain fixed electrodes and the counter electrode, and

a current change between the nucleic acid chain fixed electrodes and the counter electrode ~~is caused by the duplex chain cognitive body~~ is detected.

21. (New) The nucleic acid detection sensor according to claim 16, further comprising a reference electrode.

22. (New) The nucleic acid detection sensor according to claim 16, further comprising a decoder connected the plurality of scanning lines, configured to generate the select signals.

23. (New) The nucleic acid detection sensor according to claim 22, further comprising:

a timing pulse generator configured to generate a clock signal; and
a counter configured to connect the timing generator with the decoder.

24. (New) The nucleic acid detection sensor according to claim 16, further comprising a plurality of A/D converters each connected to the plurality of signal lines.

25. (New) The nucleic acid detection sensor according to claim 24, further comprising a plurality of amplifiers connected between the plurality of signal lines and the plurality of A/D converters.

26. (New) The nucleic acid detection sensor according to claim 16, further comprising:

a plurality of transistors each connected to the plurality of signal lines; and
a common A/D converter connected to the plurality of signal lines via the plurality of transistors.

27. (New) The nucleic acid detection sensor according to claim 26, a plurality of amplifiers connected between the plurality of nucleic acid chain fixed electrodes and the plurality of transistors.

28. (New) The nucleic acid detection sensor according to claim 16, wherein the plurality of signal lines are covered with insulation films.

29. (New) The nucleic acid detection sensor according to claim 16, wherein the nucleic acid chain fixed electrodes are comb electrodes.

30. (New) The nucleic acid detection sensor according to claim 21, wherein the nucleic acid chain fixed electrodes and the reference electrode are comb electrodes, and the nucleic acid chain fixed electrodes and the reference electrodes are arranged to be mutually engaged.

31. (New) The nucleic acid detection sensor according to claim 29, wherein the counter electrode is comb electrode, and the nucleic acid chain fixed electrodes and the counter electrode are arranged to be mutually engaged.

32. (New) The nucleic acid detection sensor according to claim 8, wherein the counter electrode is comb electrode, the nucleic acid chain fixed electrodes and the counter electrode are arranged to be mutually engaged.

33. (New) The nucleic acid detection sensor according to claim 1, further comprising a reference electrode.

34. (New) The nucleic acid detection sensor according to claim 33, wherein the nucleic acid chain fixed electrodes and the reference electrode are comb electrodes, and the nucleic acid chain fixed electrodes and the reference electrode are arranged to be mutually engaged.

35. (New) The nucleic acid detection sensor according to claim 33, wherein the reference electrode and the nucleic acid chain fixed electrodes are formed on a same plane and the counter electrode is formed so as to surround the nucleic acid chain fixed electrode.

36. (New) The nucleic acid detection sensor according to claim 11, wherein the reference electrode is comb electrode, the nucleic acid chain fixed electrodes and the reference electrode are arranged to be mutually engaged.

37. (New) The nucleic acid detection sensor according to claim 11, wherein the counter electrode is comb electrode, the nucleic acid chain fixed electrodes and the counter electrode are arranged to be mutually engaged.

38. (New) The nucleic acid detection sensor according to claim 10, wherein the counter electrode includes a plurality of counter electrodes and the plurality of counter electrodes are provided for the nucleic acid chain fixed electrodes, respectively.

39. (New) The nucleic acid detection sensor according to claim 10, wherein the reference electrode and the nucleic acid chain fixed electrodes are formed on a same plane and the reference electrode is formed so as to surround the nucleic acid chain fixed electrode.

40. (New) The nucleic acid detection sensor according to claim 16, wherein the counter electrode provided for the nucleic acid chain fixed electrodes, respectively.

41. (New) The nucleic acid detection sensor according to claim 21, wherein the reference electrode and the nucleic acid chain fixed electrodes are formed on a same plane and the reference electrode is formed so as to surround the nucleic acid chain fixed electrode.